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A NEW HELIOSTAT.

Dr. LYMAN S. DECK, Salamanca, N. Y.

This simple and inexpensive form of heliostat, some idea of which can be gained from the accompanying illustration, is designed more especially for use in photomicrography and with projection apparatus. It is constructed on a principle similar to the equatorial telescope, and consists essentially of a mirror revolving on an axis parallel to the axis of the earth and in an opposite direction to the earth and with one-half its velocity, or making a complete revolution once in 48 hours. It may be made from the works of a common clock, having a balance in the following manner :

First remove the striking parts of the clock and procure three cog-wheels,* one having 10 cogs, one 40 cogs, and the third wheel any convenient number. Now fasten the one having 10 cogs to the spindle of the hour-hand and in its place. Next, to carry the mirror, make a spindle about three inches in length and fasten the wheel of 40 cogs to it at such a place that when it is in its place in the framework of the clock it will be on a level with the wheel of 10 cogs, and then drill holes to receive it in the framework of the clock, taking great care to have it sit perpendicular to the frame when in place. Now attach the third wheel to the framework so that its cogs will match with the other two wheels and cause the spindle carrying the mirror to revolve in the same direction as the hands of the clock.

A plane mirror may be attached to the spindle by a ball-and-socket joint or any convenient means.

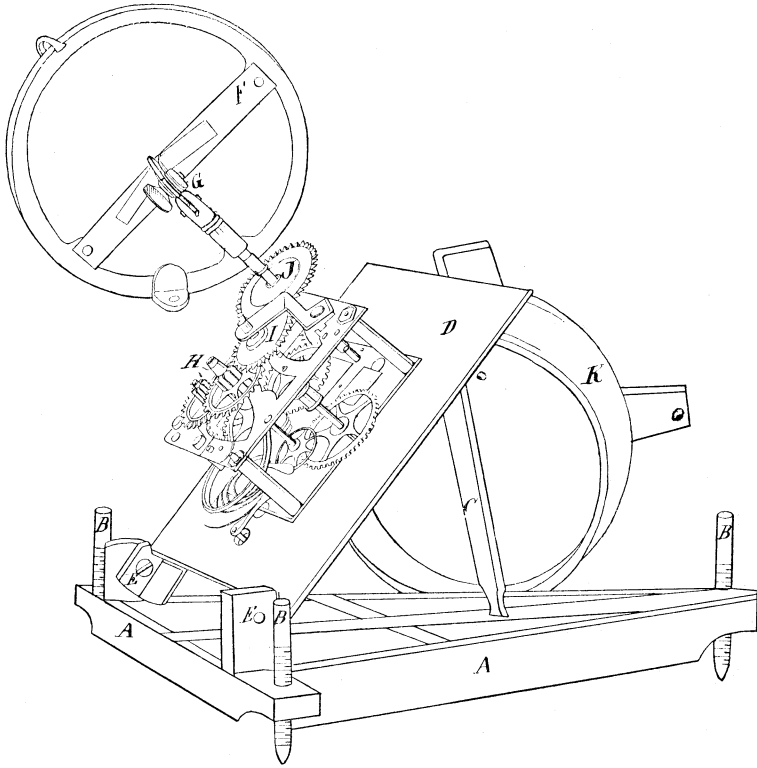
Now make a flat tripod base of iron with three leveling screws and attach the clock-work to it by means of a hinge so that it can be elevated to correspond to the latitude of the place.

To use the instrument, set it up with great care exactly north and south and elevate the axis carrying the mirror by means of a protractor and plumb to correspond to the co-latitude of the place, so that the axis points directly to the north star, and then adjust the mirror so as to reflect the light to the desired place.

* Grooved band-wheels may also be used.—W. H. S.

This simple apparatus, if well made, will answer every purpose of the more expensive heliostats and will practically keep a beam of sunlight in a constant direction for hours at a time.

As reflection from a glass mirror is not perfect, it is better in practice to not reflect the light at an angle too acute to the surface of the mirror.



Description of Plate.

- A—Triangular frame on leveling screws B.
- D—Plate of clock movement.
- C—Brace for inclining movement at proper angle.
- E—Posts on which clock-plate turns.
- F—Mirror frame on joint G.
- H—Hour spindle carrying wheel with 10 cogs.
- I—Wheel for reversing the motion of the mirror.
- J—Wheel having 40 cogs on spindle carrying the mirror.
- K—Brass case to protect the clock work from dust.